

What is claimed is:

1. A crankshaft supporter having a bearing holder to support a bearing that supports a crankshaft, said bearing holder being molded in aluminum alloy, and a preform member cast inside of the aluminum alloy, comprising:

a screw hole having one opened end in an outer surface of said bearing holder;

a concave recess section in said preform member to accommodate a bottom of said screw hole; and

an introduction passage in said recess section to introduce molten metal into the said recess section during casting.

2. The crankshaft supporter as defined in Claim 1, wherein said recess section includes a hole, and said introduction passage includes an inclined surface which is a part of an inner wall of said hole and which is inclined with respect to a flow direction of the molten metal.

3. The crankshaft supporter as defined in Claim 1, wherein said recess section includes a hole, and said introduction passage penetrates both sides of an inner wall of said hole and both outer surfaces of said preform member.

4. The crankshaft supporter as defined in Claim 1, wherein said recess section includes a groove, and said introduction passage includes an end of said groove formed as an open end that communicates with an outer surface of said preform member.

5. The crankshaft supporter as defined in Claim 4, wherein said introduction passage includes an inclined surface in which an inner wall of said groove is inclined toward a flow direction of the molten metal.

6. A crankshaft bearing supporter for attachment to a cylinder block of an engine for rotatable support of a crankshaft, said crankshaft bearing supporter comprising a preform of composite material defining thereon an upwardly facing concave arcuate surface and a downwardly facing bottom surface provided with a blind bore opening upwardly from said bottom surface and defining a closed end remote from said bottom surface, first and second communication passages formed in said preform and communicating with opposite sides of the blind bore adjacent the closed end thereof, said communication passages at other ends thereof opening outwardly through surfaces of the preform, and an outer cast aluminum alloy layer surrounding and penetrating the preform, the aluminum alloy layer completely filling the blind bore and the first and second communication passages, and a screw hole opening and projecting inwardly into the cast aluminum alloy which fills the blind bore.

7. A crankshaft bearing supporter according to Claim 6, wherein said first and second communication passages are respectively defined by first and second sloped surfaces which communicate with opposite sides of said blind bore adjacent the closed end thereof and which are reversely sloped as they project outwardly from opposite sides of the blind bore for communication with said bottom surface.

8. A crankshaft bearing supporter according to Claim 6, wherein said first and second communication passages project sidewardly in opposite directions away from said blind bore for communication with opposite side surfaces of the preform.

9. A crankshaft bearing supporter according to Claim 8, wherein said first and second communication passages also open transversely through said bottom surface.

10. A crankshaft bearing supporter according to Claim 8, wherein said first and second communication passages are spaced from and do not penetrate said bottom surface.

11. A crankshaft bearing supporter according to Claim 10, wherein said first and second communication passages define an enlargement which communicates with said blind bore adjacent the closed end thereof but which is enlarged transversely in spaced relationship from said bottom surface to define an undercut concavity which is filled with said cast aluminum alloy.

12. A crankshaft bearing supporter according to Claim 6, wherein the cast aluminum alloy layer also defines a postlike protrusion which protrudes outwardly a significant extent from said bottom surface generally in alignment with the blind bore, and said screw hole opens inwardly through the postlike projection into the cast aluminum alloy which files the blind bore.

13. A process for forming a crankshaft bearing supporter for supporting the crankshaft of an internal combustion engine, comprising the steps of:

providing a preform member of a composite material having a concave arcuate bearing recess formed in an upper surface thereof and also having a bottom surface spaced downwardly from said upper surface;

forming a blind opening in said preform which opens upwardly from said bottom surface and terminates at a generally closed upper end;

providing first and second communication passages which respectively communicate with generally opposite sides of said blind opening in the vicinity of the closed upper end thereof, said first and second communication passages at opposite ends thereof opening outwardly of the insert at locations disposed generally on opposite sides of the opening;

positioning the insert within a space defined by a mold arrangement;

providing said mold arrangement with a reentrant opening which communicates with the space generally in alignment with the blind opening formed in said preform;

supplying molten aluminum alloy into the space so as to embed the preform within the aluminum alloy and fill the blind opening, the communication passages, and the reentrant opening with said aluminum alloy to define an outwardly-protruding postlike portion for permitting auxiliary engine parts to be anchored thereto.

14. A process according to Claim 13, including the steps of flowing the molten aluminum alloy into and through the space surrounding the preform in a direction generally transverse to a mouth of said blind opening as defined in said bottom surface; and

orienting the first and second communication passages so that they allow flow of molten aluminum alloy toward or away from the bottom of the blind opening independent of the mouth.

15. A process according to Claim 14, including the steps of inclining the first communication passage from the bottom of the blind opening in an upstream direction of the flowing aluminum alloy for communication through the bottom surface upstream of the mouth, and inclining the second communication passage in the opposite direction so that it communicates with the bottom surface downstream of the mouth.

16. A process according to Claim 13, including the steps of orienting the first and second communication passages so that they project outwardly from generally opposite sides of the blind opening in directions generally transverse to the flow direction of the aluminum alloy through the space.

17. A process according to Claim 13, including the step of providing the communication passage with an enlarged undercut portion which communicates with said blind opening adjacent the closed end thereof but which is spaced interiorly from said mouth.

18. A process according to Claim 13, including the step of forming a blind screw hole which extends through the postlike projection into the cast aluminum alloy which fills the blind opening.